## 4.10 NOISE

This section summarizes significant impacts from noise conditions, and proposes mitigation measures for each identified impact.

### *A. Standards of Significance*

Projects impacts would be considered significant if they would:

- Place a new land use in an area where it would conflict with the land use compatibility noise exposure criteria shown in Table 3.10-4, or exceed the maximum allowable interior noise level for new multi-family housing set by HUD of DNL 45 dB.
- Create a substantial increase to existing ambient noise levels at a noise-sensitive land use (defined as a 3 dB increase in the DNL).
- Create construction noise levels of 70 dB $L_{eq\text{-}hour}$ or more at a sensitive receptor, or maximum noise levels greater than 95 dB at construction site property boundary.

### *B. Impact Discussion*

As noted in Section 3.10, noise sources at Ames Research Center, including certain wind tunnels and aircraft operations, have created area-wide noise. This section evaluates the compatibility of these noise sources with proposed and existing land uses at Ames Research Center.

The area-wide effects of these sources are not discussed because no changes to these noise-generating facilities are proposed in any of the five alternatives, and the existing noise sources have been evaluated in other studies. The only long-term effect that development of the NASA Ames Development Plan could have on the noise environment in the area would result from increased vehicular traffic on the street network, which is addressed in Section B.2, below.

**1. Compatible Land Use Development**

Figure 4.10-1 superimposes combined noise exposure levels over land use proposed in Alternative 5 to show noise compatibility with proposed development under the NADP. Impacts under Alternatives 2 through 4 would be similar to those shown for Alternative 5 in Figure 4.10-1.

New development in the NRP area under Alternatives 2 through 5 could create significant land use incompatibilities, since all four propose the development of apartment-style housing and childcare on NRP Parcel 6, a small portion of which is exposed to a DNL of more than 65 dB. This is an unacceptable noise level for residential uses. Therefore, this small area would be used for parking or other non-residential uses.

Under Mitigated Alternative 5, a portion of Building 19 and all of Building 20 would be used for housing. Building 20 would be exposed to noise levels of 65 to 70 dB, which is considered conditionally acceptable by HUD and California Planning Guidelines. These noise levels are considered above the conditionally acceptable level for Santa Clara County. Building 19 would be exposed to noise levels of 70 to 75 dB, which is above California Planning Guidelines conditionally acceptable levels, but is still conditionally acceptable to HUD.

NRP Parcels 9, 10, 11, and 16 are located adjacent to Highway 101, where they are exposed to DNL exceeding 70 dB. Depending upon the ultimate use of these parcels, there could be significant noise impacts.

Under Alternatives 2, 4 and 5, new development is proposed in the Bay View area. In each alternative, proposed housing is located in an acceptable noise environment carefully sited outside the 65 dB noise contour from the wind tunnels and the airfield. Under Alternative 2, the use in Bay View Parcel 3, which includes the OARF facility, is not specified. Given the high-noise uses that have taken place in this area historically, there could be land use conflicts depending on the uses proposed for this parcel.

FIGURE 4.10-1

# NOISE EXPOSURE FOR MITIGATED ALTERNATIVE 5


LEGEND:

- Partner Parcel
- Community Support
- University Reserve
- NASA Reserved
- Recreation
- Relocated AT Control Tower
- Housing - Bay View
- Housing - NRP*
- California Air and Space Center
- Historic District Infill
- Historic District Renovation
- Historic Buildings
- Computer Museum
- Supporting Retail
- Light Rail
- Preserve (Burrowing Owl)
- Open Space
- Wetlands
- Fence Line
- Bay Trail Extension

*Denotes Parcel Number as Noted on Table 5.1-1*

- (1) Ames Campus
- (1) NASA Research Park
- (1) Eastside / Airfield
- (1) Bay View

* A portion of Building 19 will remain offices

**Composite Annual Ldn Noise Exposure Contours (dB)**

DMJMH+N EDAW

0 76m 152m 305m
0 250ft 500ft 1000ft

NASA AMES RESEARCH CENTER
NASA AMES DEVELOPMENT PLAN FINAL EIS

Similarly, under Alternative 4 there are development parcels adjacent to the airfield whose uses are not specified. There could be noise exposure issues on these parcels, depending on the uses developed. In particular, portions of Bay View Parcel 7 would be exposed to a DNL exceeding 65 dB, rendering that parcel inappropriate for residential development. However, the planned use of Parcel 7 is a burrowing owl preserve. Under Alternatives 2, 4 and 5, childcare in the Bay View would be located in Parcel 2 which is located outside of the 60 dB contour. No adverse impact would be expected.

New development in the East Side/Airfield area proposed under Alternatives 2 through 5 would be located in acceptable noise environments, so there would be no incompatible land uses.

No information is available about the potential location of new development proposed in the Ames Campus area under Alternative 5. The location of the new uses could create land use incompatibilities if they are not carefully sited in regards to noise from the wind tunnels and airfield.

**2. Traffic Noise**

Increases in vehicular traffic noise along the street network in the project vicinity resulting from project-generated traffic were estimated by comparing future traffic volumes under the various development alternatives to existing traffic volumes in the area. This analysis was conducted for five key intersections, identified in the traffic study, where there could be a potential adverse noise effect. These intersections are:

- Middlefield Road at Shoreline Boulevard
- Moffett Boulevard at Central Expressway
- Moffett Boulevard at Middlefield Road
- Whisman Road at Middlefield Road
- Ellis Street at Middlefield Road

TABLE 4.10-1 **INCREASES IN TRAFFIC NOISE ABOVE BASELINE LEVELS - PROJECT + CUMULATIVE TRAFFIC (dB)[1]**

| Intersection | Link | Alt.1 | Alt. 2 | Alt. 3 | Alt. 4 | Alt. 5* |
|---|---|---|---|---|---|---|
| Middlefield at Shoreline | SB | 1.3 | 1.4 | 1.4 | 1.4 | 1.3 |
| | WB | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | NB | 1.3 | 1.3 | 1.4 | 1.3 | 1.3 |
| | EB | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Moffett at Central | SB | 1.4 | 1.4 | 1.4 | 1.4 | 1.0 |
| | WB | 1.7 | 2.2 | 2.1 | 2.4 | 1.9 |
| | NB | 1.4 | 1.5 | 1.4 | 1.5 | 1.4 |
| | EB | 1.9 | 2.2 | 2.0 | 2.3 | 2.0 |
| Moffett at Middlefield | SB | 1.5 | 1.6 | 1.6 | 1.6 | 1.5 |
| | WB | 1.0 | 1.3 | 1.3 | 1.5 | 1.2 |
| | NB | 1.7 | 1.8 | 1.9 | 2.1 | 1.8 |
| | EB | 1.2 | 1.5 | 1.4 | 1.5 | 1.3 |
| Whisman at Middlefield | SB | 1.5 | 1.7 | 1.5 | 1.8 | 1.5 |
| | WB | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| | NB | 1.8 | 2.0 | 1.8 | 2.1 | 1.9 |
| | EB | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Ellis at Middlefield | SB | 1.7 | 1.7 | 1.8 | 2.0 | 1.8 |
| | WB | 2.7 | 3.2 | 3.3 | 3.2 | 3.0 |
| | NB | 2.2 | 2.6 | 2.6 | 2.6 | 2.4 |
| | EB | – | – | – | – | -- |

1. Year 2013.

**Note:** Noise level increases are shown to the nearest 0.1 dB for comparison purposes only.

* No change is expected in Mitigated Alternative 5. See Section 5.4.

The PM peak hour was selected to determine the estimated change in the traffic noise environment. An increase in the average noise level $L_{eq\text{-}hour}$ of 3 dB or more as a result of the project-generated traffic would be expected to cause a similar increase in the DNL and would be considered a significant adverse effect. Table 4.10-1 shows the calculated future increases in traffic noise above existing levels along representative roadway segments. Alternative 1 is the future baseline. The contribution of project generated traffic noise to the total cumulative increase is the difference between the values shown for Alternative 1 and the other alternatives. Traffic generated by the proposed project would cause an increase of less than 1 dBA at all of the intersections studied, and thus would not result in a significant adverse impact at any sensitive receptors in the area.

**3. Construction Noise**

Implementation of the NASA Ames Development Plan will require demolition and construction activities, which will cause temporary increases in noise levels at Ames Research Center. The amount of noise generated will depend upon the type of demolition and construction activity, and the level of impact from the noise depends upon proximity of noise sensitive land uses. Typical construction noise levels are shown in Tables 4.10-2 and 4.10-3. The values in Table 4.10-3 indicate the range of average noise levels associated with different levels of activity.

Demolition or construction activities may intermittently affect adjacent land uses and Ames Research Center itself. Such construction disturbances would be intermittent and would be minimized through the appointment of a noise coordinator to deal with construction-related noise effects. These impacts would hence be considered less-than-significant.

TABLE 4.10-2 **NOISE LEVELS BY CONSTRUCTION PHASES**[1]

| Activity | Housing I | Housing II | Office, Hotel, School, I | Office, Hotel, School, II | Parking Garage, Store I | Parking Garage, Store II | Roads, Highways, Sewers and I | Roads, Highways, Sewers and II |
|---|---|---|---|---|---|---|---|---|
| Ground Clearing | 83 | 83 | 84 | 84 | 84 | 83 | 84 | 84 |
| Excavation | 88 | 75 | 89 | 79 | 89 | 71 | 88 | 78 |
| Foundations | 81 | 81 | 78 | 78 | 77 | 77 | 88 | 88 |
| Erection | 81 | 65 | 87 | 75 | 84 | 72 | 79 | 78 |
| Finishing | 88 | 72 | 89 | 75 | 89 | 74 | 84 | 84 |

**Notes:** I: All pertinent equipment present at site
II: Minimum required equipment present at site

1. Typical noise levels at 15 meters (50 feet) from construction sites measured $L_{eq}$ in dBA.

**Source**: USEPA, Legal Compilation on Noise, Vol.1, p. 2-104, 1973.

### *C. Impacts and Mitigation Measures*

**Impact NOISE-1:** Buildout of the NADP would potentially expose new land uses in the Bay View, NRP, and Ames Campus areas to existing noise sources at levels exceeding those considered normally acceptable for the intended use. Buildings 19 and 20, which are proposed for housing in Mitigated Alternative 5, would be in the 70 to 75 dB and 65 to 70 dB noise exposure areas, respectively.

Applicable to: Alternatives 2 through 5, and Mitigated Alternative 5

Mitigation Measure NOISE-1a: For development on NRP Parcels 2, 4, 9, 10, 11, 12, 12a and 16, and the Ames Campus, noise mitigation measures, including site planning to protect noise sensitive outdoor activity areas and building sound insulation treatments to protect noise sensitive indoor spaces, would be included in project design and development. Buildings would be designed to provide an appropriate Noise Level Reduction (NLR) depending upon the designated uses of the sensitive spaces.

Mitigation Measure NOISE-1b: Residential development proposed on Parcels 6, 12 and 12a would be designed so as to achieve an indoor DNL of 45 dB or less. The housing would be provided with forced-air mechanical ventilation or air-conditioning as necessary to achieve a habitable interior environment with the windows closed.

**Impact NOISE-2:** Buildout of the NADP would potentially expose new land uses in the Bay View area to existing noise sources at levels exceeding those considered normally acceptable for the intended use.

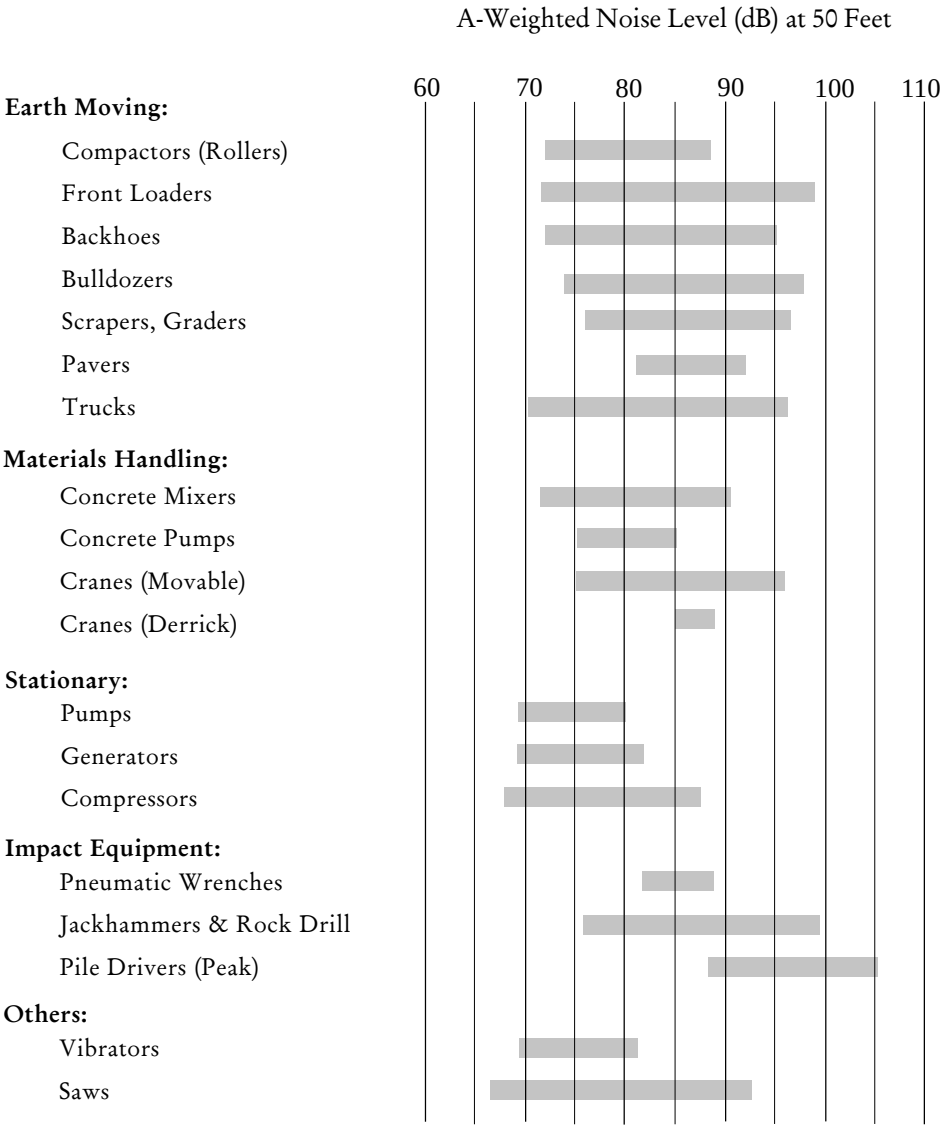
Applicable to: Alternatives 2, 4 and 5, and Mitigated Alternative 5

Mitigation Measure NOISE-2a: For development on parcels in the Bay View area near the OARF, noise mitigation measures including site planning to protect noise sensitive outdoor activity areas and building sound insulation treatments to protect noise sensitive indoor spaces would be included in project design and development. Buildings would be designed to provide an appropriate Noise Level Reduction (NLR) depending upon the designated uses of the sensitive spaces.

Mitigation Measure NOISE-2b: Once development occurs in the Bay View area, NASA would operate the OARF so that noise generated by it would not exceed the following levels when measured on any residential property:

| | $L_{max}$ | $L_{eq\text{-}hour}$ |
|---|---|---|
| Daytime (7 am - 10 pm) | 70 | 50 |
| Nighttime (10 pm - 7 am) | 65 | 45 |

## TABLE 4.10-3
## CONSTRUCTION EQUIPMENT NOISE LEVEL RANGE




Source: Illingworth & Rodkin